

**SOUTH DAKOTA BOARD OF REGENTS**

**Full Board**

**AGENDA ITEM: 20**

**DATE: June 11-12, 2014**

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**SUBJECT: SDBOR Peer Selection Summary**

SDBOR central office staff have worked with campuses over the last several months to assemble an institutional peer set for each Regental university. These peer sets will be used for general purposes in future SDBOR analyses where peer comparisons would be informative and appropriate. This item describes the methodology used in SDBOR's most recent peer selection process, and provides a list of each institution's final peer set.

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**RECOMMENDED ACTION OF THE EXECUTIVE DIRECTOR**

Information only.



\*\*\* Special Data Analysis \*\*\*

## *SDBOR* *Peer Selection*

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*Some measures of institutional performance can be difficult to interpret without proper context. For example, knowing that “University X spends \$8,000 annually on instruction per FTE student” means little in the absence of analogous information from other similar institutions. While SDBOR analyses often rely on inter-system comparisons, there are instances – due to differences in institutional size, type, mission, etc. – when these comparisons are not optimal. The following report summarizes the analytic process used to identify appropriate peer sets for each Regental university.*

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### ***Purpose***

Each Regental university maintains its own list of institutional peers for use in various internal analyses. Yet these peer groups sometimes are not suitable for use at the system level, given the variety of purposes and methods by which these lists were created. Some institutions, for example, have established multiple peer groups (with separate lists for “current peers” and “aspirational peers”), while others have combined all peer types within a single list. In some cases, peers have been selected manually by expert judgment, and in other cases peer lists have emerged from rigorous statistical investigation. Because of this diversity of approaches, the SDBOR central office typically has relied on its own independent peer lists to ensure some degree of uniformity in the processes used to select these groups.

Because the system office’s most recent peer lists were long out of date, the current project aimed to develop a new and authoritative set of peers for each Regental institution. Moving forward, it is expected that these peer lists will be updated every five years.

The current peer selection process was undertaken with several assumptions in mind:

- System-level peer groups should be established using a systematic methodology to help ensure that each institution is compared to a similarly-constituted group.
- System-level peer groups should reflect institutional priorities, and institutions should have an active voice in selecting their peers.
- System-level peer groups should be oriented toward present conditions, not future conditions.
- System-level peer groups serve a limited analytic role, and should not be seen to replace the peer groups campuses have developed on their own.

### *Peer Selection Process Overview*

Several peer selection approaches were considered for use in the current project. These methods included: using existing institution-selected peer groups, creating lists by applying simple filters to third-party databases (e.g., IPEDS), or deploying appropriate quantitative techniques. Based on a review of practices at other institutions, it was agreed that peers would be selected through a hybrid approach combining:

**Phase 1: An initial screening conducted by the system office:** By filtering and cluster analyzing IPEDS data, a full list of each institution's universe of potential peers would be culled to a short list of roughly 15-25 plausible peers.

**Phase 2: Final selection based on campus-level review:** Each university would examine its short list of plausible peers and designate 5-10 of these institutions as final peers.

Further information about each of these steps is provided on the following pages.

– *Sidebar: Cluster Analysis* –

*As mentioned above, this project involved the use of a technique known as **cluster analysis**. Generally speaking, cluster analysis is a broad term for a family of procedures that are designed to reveal patterns within complex data. The main goal of cluster analysis is to identify homogenous groups based on multivariate measurements. In other words, cluster analysis is used to identify similar cases (in this instance, colleges and universities) based on those cases' measured characteristics.*

*Specifically, this analysis incorporated **hierarchical agglomerative cluster analysis** as its primary methodology. Hierarchical methods of cluster analysis are distinguished from other forms of cluster analysis by their focus on discovering taxonomic relationships between cases. As in biological classification, hierarchical cluster analysis attempts to group observations into descending ranks of resemblance. Consequently, this technique assisted in the process of narrowing down large populations of US colleges and universities into institutional groupings that increasingly resembled SDBOR institutions.*

**Process Details**

**Preliminary Work**

In 2013, SDBOR finance staff began working with campus representatives to establish baseline considerations for selecting institutional peer groups. BAC members from each campus were asked to formulate recommendations of institutional characteristics (e.g., sector, size, geography, academic profile, financials) that could be used as criteria in the peer selection process. Similar feedback was solicited by SDBOR academic affairs staff from AAC members.

**Phase 1: Initial Screening**

For each Regental university, the screening process proceeded in three stages. The first stage was identical for all universities; stages two and three were customized for each campus.

<i>Screening Stage</i>	<i>Description</i>																																			
<i>(1) Gathering IPEDS data on the full universe of relevant postsecondary institutions</i>	Institution-level IPEDS data were collected on all public, four-year, degree-granting, non-tribal institutions in the United States. Data were gathered for a wide range of indicators, including institutional descriptors, student characteristics, enrollments, degrees conferred, tuition and fees, and financial data. All analyses were conducted using three-year-averaged data (from the three most recent years).																																			
<i>(2) Filtering the above universe to a population of possible peers</i>	For each SDBOR campus, the above universe of all US public, four-year, degree-granting, non-tribal institutions was filtered to a population of possible peers. Filtering was based on rough parameters that reflected the considerations recommended by campus staff. By institution, these criteria included: <table border="1" data-bbox="605 1262 1411 1455" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>B</th> <th>D</th> <th>N</th> <th>M</th> <th>S</th> <th>U</th> </tr> </thead> <tbody> <tr> <td><i>Enrollment</i></td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> </tr> <tr> <td><i>Carnegie classification</i></td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> <td>■</td> </tr> <tr> <td><i>Academic emphasis (computers)</i></td> <td></td> <td>■</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td><i>Academic emphasis (STEM)</i></td> <td></td> <td></td> <td></td> <td>■</td> <td></td> <td></td> </tr> </tbody> </table> Following this procedure, each institution’s list of possible peers contained roughly 75-150 institutions.		B	D	N	M	S	U	<i>Enrollment</i>	■	■	■	■	■	■	<i>Carnegie classification</i>	■	■	■	■	■	■	<i>Academic emphasis (computers)</i>		■					<i>Academic emphasis (STEM)</i>				■		
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<i>Academic emphasis (computers)</i>		■																																		
<i>Academic emphasis (STEM)</i>				■																																
<i>(3) Clustering the above population to a short list of plausible peers</i>	In the final stage, lists of possible peers were cluster analyzed to identify groups of institutions that most closely resembled each SDBOR campus. Cluster analytic models were developed in collaboration with campuses in iterative fashion, meaning that campuses were given several opportunities to select the criteria that would be used in the peer search. Reflecting campus suggestions, final clustering models considered the following areas: <p style="text-align: right;"><i>(continued on next page)</i></p>																																			

	B	D	N	M	S	U
<i>Total revenues per FTE</i>		■		■		
<i>State appropriations per FTE</i>	■		■		■	
<i>Tuition revenue per FTE student</i>			■	■		
<i>Endowment per FTE</i>					■	
<i>Research spending per FTE</i>				■	■	■
<i>Fall FTE enrollment</i>			■			■
<i>UGs who are part-time (%)</i>		■				
<i>Total degrees awarded</i>	■					
<i>Bachelor's degrees awarded</i>			■			
<i>STEM degrees (%)</i>	■			■		
<i>Number of prof. programs</i>						■
<i>ACT scores</i>	■	■	■	■	■	■
<i>Pell recipients (%)</i>	■	■	■	■	■	■

Following this procedure, each institution's list of plausible peers contained roughly 15-25 institutions.

### ***Phase 2: Final Selection***

In the second phase of the project, short lists of plausible peers were provided to AAC members at each campus. Each university was asked to select – from its list of plausible peers – a subset of 5-10 institutions that would serve as the institution's final peer set; each institution could select any number of peers within this range. Each institution was free to finalize its peer list by any method(s) it wished to use. Options included but were not limited to:

- Hand-selecting institutions based on qualitative impressions of similarity
- Cross-referencing with internal peer lists to identify overlapping peers
- Choosing peers based on additional data analysis

Data used in the screening phase of the project were available to the universities on request in the event that campus staff wished to make use of them in the selection phase. Final peer lists were submitted by AAC members to the central office in May 2014. These lists are shown in Appendix A.

*Appendix A*  
*Final Peer Lists*

**Table 1. Final Peer Lists**

BHSU	SDSMT
Adams State University, CO Bemidji State University, MN Eastern Oregon University, OR Minot State University, ND Montana State University – Billings, MT Southwestern Oklahoma State University, OK Louisiana State University – Shreveport, LA Eastern New Mexico State University, NM Fairmont State University, WV Georgia Southwestern State University, GA	Missouri University of Science and Technology, MO Michigan Technological University, MI Montana Tech of the University of Montana, MT
DSU	SDSU
Eastern Oregon University, OR Louisiana State University – Shreveport, LA Northwest Missouri State University, MO Oregon Institute of Technology, OR Southern Polytechnic State University, GA SUNY Institute of Technology at Utica-Rome, NY University of Illinois at Springfield, IL	Montana State University (Bozeman), MT Oklahoma State University, OK University of Idaho, ID University of Nebraska – Lincoln, NE University of Nevada – Reno, NV North Dakota State University, ND University of North Dakota, ND Utah State University, UT
NSU	USD
Concord University, WV Lake Superior State University, MN University of Minnesota – Crookston, MN Indiana University – East, IN Indiana University – Kokomo, IN West Liberty University, WV West Virginia State University, WV	University of Montana, MT University of Idaho, ID University of Missouri – Kansas City, MO University of North Dakota, ND University of Vermont, VT University of Mississippi, MS University of Rhode Island, RI Southern Illinois University at Carbondale, IL